

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : MATSUSHITA ELECTRIC IND CO LTD

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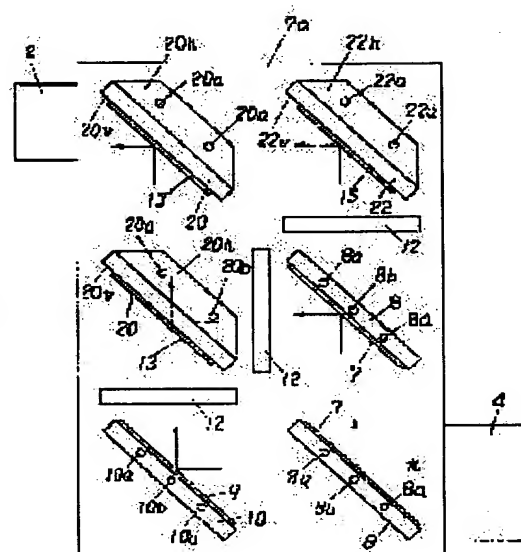
(72)Inventor : ARIGA SAKAE

LIQUID CRYSTAL VIDEO PROJECTION TYPE DISPLAY DEVICE

Abstract:

PROPOSE: To prevent the distortion of a video reflected on a mirror which is caused by the deformation of a mirror mounting frame by fastening screws at the time of mounting a mirror with a chassis as to a mirror mounting structure for a liquid crystal video projection device.

INSTITUTION: The color resolution for light emitted from a lamp 4 is formed by a color resolving dichroic mirror 7 on a supporting frame 8, a back mirror 9 on a supporting frame 10, and then the light is reflected so as to be made incident on a liquid crystal panel 12. The color thesis for light emitted from the liquid crystal panel 12 is performed by a color synthesizing dichroic mirror 13 on a cantilever supporting frame 22, a front surface mirror 15 on a cantilever supporting frame 22 again, then, it is projected on a screen by a projection lens 2. By having a cantilever supporting frame structure in such a way, the stress is not applied to mirror mounting parts 20v and 22v at the time of fastening the screws on the side of a side plate 7b, so that the surface accuracy of the mirror can be kept constant.



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IMS

m(s)]

m 1] The lamp which emits a parallel ray, and light Red, blue, the color-separation dichroic mirror for carrying out spectrum green, and a rear-face mirror, The liquid crystal panel which receives the light from said lamp for a driving element in preparation for each picture element, The color composition dichroic mirror and front surface mirror for compounding the output light from said liquid crystal panel, the frame of the shape of a cantilever which supports said color composition dichroic mirror and front surface mirror, and the projection lens which projects said compounded output light on a screen -- **** -- the liquid crystal image projection arrangement characterized by things.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[1] [Industrial Application] This invention relates to the liquid crystal image projection arrangement in which the mirror is attached with a sufficient precision by the chassis.

[2] [Description of the Prior Art] In recent years, big spread is expected from simple [of installation of red and the liquid crystal image projection arrangement which compounds each green and blue image by the mirror, and is projected on a screen with one projection lens]. An example of the conventional liquid crystal image projection arrangement mentioned above while referring to the drawing below is explained. Drawing 3 and drawing 4 show the optical unit of conventional liquid crystal image projection arrangement. A projection lens for 2 to make an image project to a screen (not shown) in drawing, A color-separation dichroic mirror for the lamp with which 4 emits a parallel ray, the plate with which 6a and 6b are supporting optical system, and 7 to carry out the spectrum of the light emitted from lamp 4, and 8 are the support frames for supporting the color-separation dichroic mirror 7. 8a and 8b are installation screws, and the support frame 8 is attached in side plates 6a and 6b by installation bis-8a and 8b. A rear-face mirror for reflect the light from said lamp 4 and 10 are the support frames for supporting the rear-face mirror 9, 10a and 10b installation screws, and the support frame 10 is attached in side plates 6a and 6b by installation bis-10a and 10b. A color composition dichroic mirror for the liquid crystal panel with which 12 receives the light from a lamp 4 for a switching element in preparation for each picture element, and 13 to compound the output light from a liquid crystal panel 12, and 14 are the support frames for supporting the color composition dichroic mirror 13, 14a and 14b are installation screws, and the support frame 14 is attached in side plates 6a and 6b by installation bis-14a and 14b. A front surface mirror for 15 to reflect the output light from a liquid crystal panel 12 and 16 are the support frames for supporting a front surface mirror 15, 16a and 16b are installation screws, and the support frame 16 is attached in side plates 6a and 6b by installation bis-16a and 16b. About the conventional liquid crystal image projection arrangement constituted as mentioned above, the actuation is explained below. It is decomposed and reflected by the color-separation dichroic mirror 7 of the support frame 8, and the rear-face mirror 9 of the support frame 10, and the light emitted from lamp 4 carries out incidence of the color to a liquid crystal panel 12 in them. A color is again compounded by the front surface mirror 15 of the color composition dichroic mirror 13 of the support frame 14, and the support frame 16, the light which came out of the liquid crystal panel 12 is projected on a screen (not shown) with the projection lens

[3] [Problem(s) to be Solved by the Invention] However, in case the opposite side of the support frames 14 and 16 is attached in side plate 6b after it attached in side plate 6a and having been attached by bis-14a and 16a, and it fixes by bis-14b and 16b, the support frames 14 and 16 may be made to deform the support frames 14 and 16 with a configuration like such before by how to bind a screw tight. The color composition dichroic mirror 13 and front surface mirror 15 which are attached in the support frames 14 and 16 by that cause were ****(ed), and it had the trouble that it became impossible to also distortion convergence adjust an image.

[4] This invention solves the above-mentioned technical problem, and in case the support frame of a mirror is attached, it aims at offering the support frame which is not ***** about a mirror.

[5] [Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention the lamp which emits a parallel ray, and light Red, blue, and the color-separation dichroic mirror and rear-face mirror for carrying out a spectrum green, The liquid crystal panel which receives the light from said lamp for a switching element in preparation

ch picture element, The color composition dichroic mirror and front surface mirror for compounding the output from said liquid crystal panel, It has the frame of the shape of a cantilever which supports said color composition oic mirror and front surface mirror, and the projection lens which projects said compounded output light on a n, and stress is not applied to said color composition dichroic mirror and front surface mirror at the time of an ably, but it is made for an image not to be distorted.

5] tion] By the above-mentioned configuration, this invention can prevent generating of distortion of the support e on an installation screw.

7] mple] Hereafter, it explains, referring to drawing 1 - drawing 2 about one example of this invention. In drawing 1 drawing 2, 20 is the cantilevered suspension frame of the L form which supports the color composition dichroic or 13, 20a is an installation screw, 20h is the installation section to a side plate, and 20v is the mirror installation on. 20h of side plate installation sections of the cantilevered suspension frame 20 is attached in side plate 7a by llation bis-20a in the shape of a cantilever. 22 is the cantilevered suspension frame of the L form which supports a surface mirror 15, 22a is an installation screw, 22h is the side plate installation section, and 22v is the mirror llation section. 22h of installation sections to the side plate of the cantilevered suspension frame 22 is attached in plate 7a by installation bis-22a in the shape of a cantilever. About the conventional liquid crystal image projection gement constituted as mentioned above, the actuation is explained below. It is decomposed and reflected by the -separation dichroic mirror 7 of the support frame 8, and the rear-face mirror 9 of the support frame 10, and the emitted from the lamp 4 carries out incidence of the color to a liquid crystal panel 12 in them. A color is again ounded by the front surface mirror 15 of the color composition dichroic mirror 13 of the cantilevered suspension e 20, and the cantilevered suspension frame 22, and the light which came out of the liquid crystal panel 12 is cted on a screen (not shown) with the projection lens 2. As mentioned above, by making it a cantilevered ension frame, since it is certainly fixed to side plate 7a side plate installation sections [20h and 22h] in respect of g large, it attaches, and it appears in precision and a target on the strength enough, and, for a certain reason, the side : 7b side was it less necessary to be fixed. In order not to apply stress by that cause to the mirror installation sections and 22v in the case of the bis-bundle by the side of side plate 7b, the profile irregularity of a mirror is maintainable. 8] Furthermore, by finishing correctly the squareness of the installation section to the side plate of the cantilevered ension frames 20 and 22, and the mirror installation section, the configuration which attached a side plate and 7a was made into datum level forms an optical path with a very high precision, and assembly nature is raised easily. 9] In addition, although the example of L form was described as a cantilever-like frame appearance, it cannot be emphasized that appearances are arbitration, such as T form and a flat form, specially.

0] act of the Invention] The lamp which emits a parallel ray according to this invention so that clearly from the above ple, Light Red, blue, and the color-separation dichroic mirror and rear-face mirror for carrying out a spectrum n, The liquid crystal panel which receives the light from said lamp for a switching element in preparation for each re element, The color composition dichroic mirror and front surface mirror for compounding the output light from liquid crystal panel, It has the frame of the shape of a cantilever which supports said color composition dichroic or and front surface mirror, and the projection lens which projects said compounded output light on a screen. Stress it applied to said color composition dichroic mirror and front surface mirror at the time of an assembly, but an ge can be prevented from being distorted, and the liquid crystal image projection arrangement which convergence stment tends [very] to perform can be offered.

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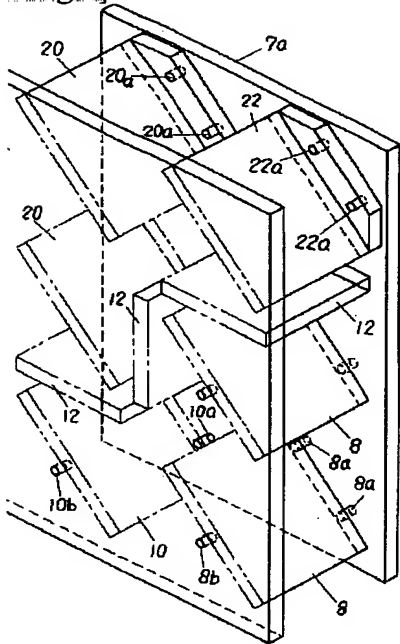
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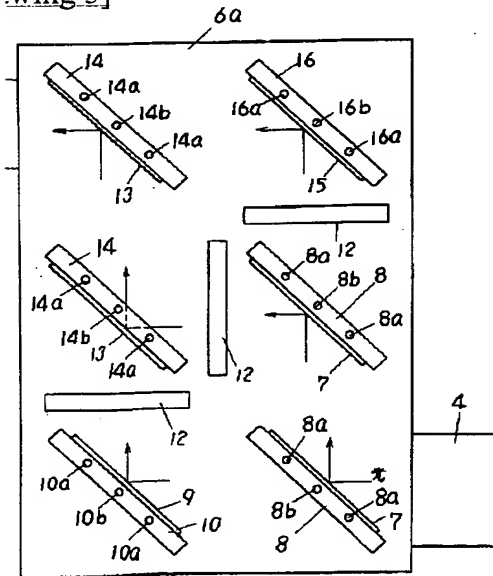
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DRAWINGS

[wing 2]



[wing 3]



[wing 1]

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- 2 ランプ
- 4 投写レンズ
- 7 色分解
ダイクロイックミラー
- 9 裏面鏡
- 12 液晶パネル
- 13 色合成
ダイクロイックミラー
- 15 表面鏡
- 20, 22 片持ち支持フレーム

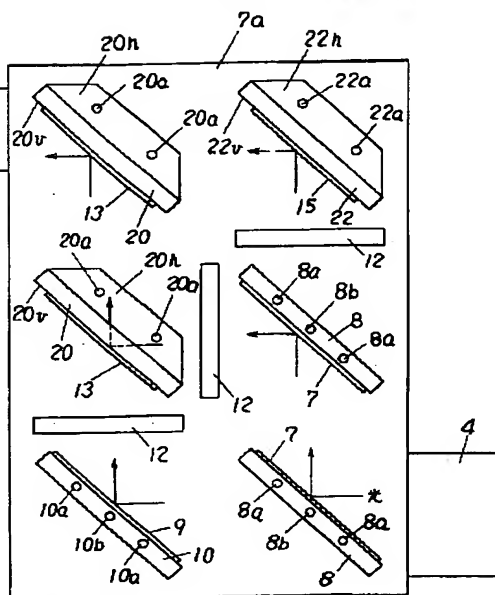
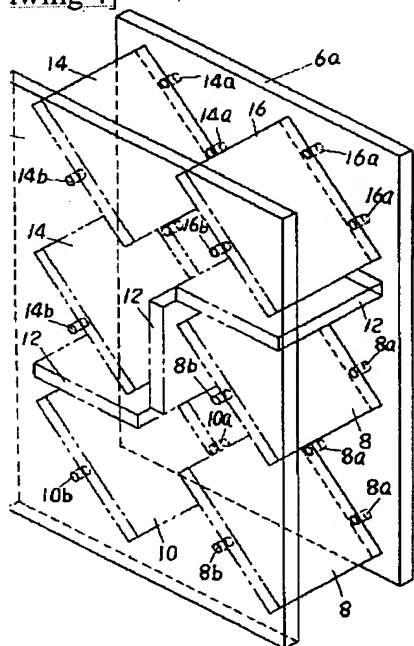


Figure 4]



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